AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Currently Amended) Affinity sensor for detecting specific binding events in response to a sample medium, comprising:

a carrier substrate provided with at least two electrodes and having a predetermined area therebetween, said electrodes being equidistantly spaced apart from each other and engagingly bordering said area on opposing sides, at least said area having immobilized specific binding partners for affinity binding complementarily associated binding partners ~~directly or via further specific binding molecules~~ wherein the specific binding partners are nucleic acids; and

said area being accessible to said complementarily associated binding partners provided in the sample medium and having a minimum width adapted for capture of at least one of said complementarily associated binding partners provided with [[one]] an electrically conductive particle within said area by affinity binding with said immobilized specific binding partners ~~to form a respective tunnel contact junction between the particle and the electrodes~~.

2. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 1, wherein said width is under 800 nm.

3. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 1, wherein the immobilized specific binding partners cover said area with a thickness which permits tunnel effects.

4. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 1, wherein the electrodes are each two micro-electrodes arranged in a pair, the electrodes being connected to an amplifier circuit with an associated measuring and evaluating unit so that an electric current flow across the area can be detected when there is a voltage applied across the electrodes.

5. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 4, wherein the electrodes are part of the amplifier circuit and project from out of the latter.

6. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 5, wherein the amplifier circuit is a component of a microchip.

7. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 1, wherein the electrodes are comb-like structures opposingly meshed, and said predetermined area includes affinity areas ~~at least between respective opposing ones of said electrodes~~ positioned between the comb-like structures.

8. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 7, wherein the comb-like electrodes and the affinity areas are arranged on a common chip surface.

9. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 8, wherein the chip surface is ~~formed by a~~ silicon ~~wafer~~.

10. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 8, wherein the chip surface is ~~formed by a~~ glass ~~target~~.

11. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 7, wherein the ~~comb-like~~ electrodes are arranged in geometrical symmetry to interdigital structures and said affinity areas are arranged in a matrix, the electrodes are separated from each other at intersections by an insulating layer arranged between the electrodes.

12. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 7, wherein said electrodes are micro-electrodes and ~~a length of~~ the micro-electrodes [[is]] have a length of 0.1 mm, the width of the area is 0.1 μm and its effective height is 0.02 μm as well as the affinity areas is at a 1:10 ratio relative to the chip surface.

13. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as in claim 7, wherein in addition to the affinity areas at least one reference area ~~is provided which carries inactive binding partner for a reference~~

~~measurement instead of the specific binding partners~~ has immobolized inactive binding partners.

14. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 7, wherein ~~occupation densities of the specific binding partners~~ a number of specific binding partners per unit area on the individual affinity areas are different.

15. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 7, wherein the ~~individual~~ affinity areas carry different specific binding partners.

16. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 1, 13, 14 or 15, ~~wherein~~ further comprising a plurality of reference areas ~~is provided occupied with~~ having different inactive binding partners.

17. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 1, wherein the specific binding partners ~~enter into~~ are suited for entering into chemical coordination.

18-21. (Cancel)

22. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 1, wherein the conductive particles are of sizes in the range of 0.1 μm to 5 μm.

23. (Cancel)

24. (Currently Amended) Affinity sensor for detecting specific ~~molecular~~ binding events as claimed in claim 1, wherein the conductive particles consist of metal-cluster compounds.

25-36. (Canceled)